

Weekly Report

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One possible way to combine results of 2009 & 2012

Relative branching ratio for 2009: $\frac{B(J / \Psi \rightarrow invisible)}{B(J / \Psi \rightarrow \mu^+ \mu^-)} = (-7.55 \pm 33.7) \times 10^{-4}$

Relative branching ratio for 2012: $\frac{B(J / \Psi \rightarrow invisible)}{B(J / \Psi \rightarrow \mu^+ \mu^-)} = (-219.72 \pm 34.44) \times 10^{-4}$

$$\mu = \frac{\sum_{i=1}^I \frac{x_i}{\sigma_i^2}}{\sum_{i=1}^I \frac{1}{\sigma_i^2}}, \sigma = \frac{1}{\sqrt{\sum_{i=1}^I \frac{1}{\sigma_i^2}}} \Rightarrow \frac{B(J / \Psi \rightarrow invisible)}{B(J / \Psi \rightarrow \mu^+ \mu^-)} = (-111.33 \pm 24.09) \times 10^{-4}$$

Discussion with Bi Xiaojun's Group about χ_c 's case

- There're no strong constraint on dark matter decay at energy range at BESIII.
 - There're no advantages/disadvantages in theory for decay mode with/without charmonium as resonance state.
 - There're no advantages/disadvantages in theory for visible/invisible final states.
- Maybe we can try $\chi_{cJ} \rightarrow \gamma + ee$.  Amit is working on this channel.
(signal MC generating step)

Thanks!